

PATENT
Docket Number 58060-010200

Claim 1 (currently amended): A rotor blade assembly for providing vertical lift to an aircraft comprising

a rotor head;

a plurality of cam surfaces;

a plurality of blades, each blade attached to a cam surface, wherein movement of at least one of the plurality of cam surfaces causes the radial distance between the distal tip of the attached blade and the center of the rotor head to alter; and

wherein the distal tip of the rotor blade is withdrawn within the outer periphery of the rotor head.

Claim 2 (previously presented): The rotor blade assembly of Claim 1 further comprising:

an operating cam rotatably mounted relative to the rotor head, wherein the plurality of cam surfaces are located on the operating cam.

Claim 3 (previously presented): The rotor blade assembly of claim 2 further comprising:

the operating cam having upper and lower plates;

cam surfaces on the upper plate substantially matching cam surfaces on the lower plate;

each blade spar positioned between the upper and lower plates; and

each blade spar attached to a cam surface on the upper plate and the substantially matching cam surface on the lower plate.

Claim 4 (previously presented): The rotor blade assembly of Claim 2,

wherein each blade comprises a blade spar, wherein the blade spar is attached to a cam surface.

PATENT
Docket Number 58060-010200

Claim 5 (currently amended): The rotor blade assembly of claim 2,

wherein each blade comprises a root and a tip, and wherein each root is attached to a cam surface[[:]].

Claim 6 (original): The rotor blade assembly of Claim 1 further comprising:

at least one pitch controller attached to at least one blade;

each pitch controller connected to a swash plate; and

the swash plate moving at least one pitch controller whereby the pitch of its corresponding blade is altered; whereby movement of a cam surface causes the radial distance between the distal tip of the attached blade and the center of the rotor head to alter.

Claim 7 (original): The rotor blade assembly of claim 6 further comprising:

a plurality of bladeletts positioned near the outer periphery of the rotor head;

the bladeletts having a retracted position wherein substantially all portions of the bladeletts are within the outer periphery of the rotor head; and

a bladelett control mechanism for imparting force to the bladeletts, wherein the imparted force moves a portion of one or more bladeletts beyond the periphery of the rotor head, whereby passing air impacts the moved one or more bladeletts exerting a pressure which causes rotational movement of the rotor blade assembly.

Claim 8 (original): The rotor blade assembly of claim 7 wherein the bladelett control mechanism further comprises:

an actuator; and

an actuator cable attached to the actuator and one or more bladeletts, wherein energizing the actuator pulls the actuator cable whereby the actuator cable transmits force to the one or more bladeletts.

PATENT
Docket Number 58060-010200

Claim 9 (original): The rotor blade assembly of claim 6 further comprising:

a blade spar on each blade;

each blade spar connected to one cam surface;

a spar guide having an opening, said blade spar passing through the opening in a sliding fit;

said pitch controller having an opening, said blade spar passing through the opening in a sliding fit;

the pitch controller opening having an internal shape substantially matching the external shape of the blade spar; and

a pitch control rod interacting between the pitch controller and the swash plate;

whereby the pitch controller controls the pitch of each blade spar.

Claim 10 (original): The rotor blade assembly of claim 9 wherein the internal shape of the pitch controller opening is polygonal.

Claim 11 (original): The rotor blade assembly of claim 9 wherein the internal shape of the pitch controller opening is splined.

Claim 12 (original): The rotor blade assembly of claim 9 wherein the internal shape of the pitch controller includes curved surfaces.

Claim 13 (original): The rotor blade assembly of claim 9 further comprising a swiveling connector connecting the spar guide to the rotor head, wherein the spar guide may swivel relative to the rotor head.

PATENT
Docket Number 58060-010200

Claim 14 (withdrawn): A rotor blade assembly for providing vertical lift to an aircraft comprising:

a rotor head;

a plurality of cam surfaces;

a plurality of blades, each blade attached to a cam surface;

whereby movement of a cam surface causes the attached blade to move longitudinally altering its lift characteristics.

Claim 15 (withdrawn): A rotor blade assembly for providing vertical lift to an aircraft comprising:

a rotor head;

at least one cam surface;

a blade attached to a cam surface;

a portion of the blade providing lift;

whereby movement of a cam surface causes the attached blade to decrease or increase the length of the portion providing lift.

Claim 16 (withdrawn): A rotor blade assembly for providing vertical lift to an aircraft comprising:

a rotor head;

a rotatable wheel;

a plurality of blades, each blade attached to the rotatable wheel;

whereby movement of the rotatable wheel causes the radial distance between the distal tip of the attached blade and the center of the rotor head to alter.

PATENT
Docket Number 58060-010200

Claim 17 (withdrawn): A rotor blade assembly for providing vertical lift to an aircraft comprising:

- a rotor head;
- an operating wheel rotatable around a central point, and rotatable relative the rotor head;
- a plurality of blades, each blade attached to the operating wheel;
- whereby movement of the operating wheel causes the radial distance between the distal tip of the attached blade and the center of the rotor head to alter;
- at least one pitch controller attached to at least one blade;
- each pitch controller connected to a swash plate; and
- the swash plate moving at least one pitch controller whereby the pitch of its corresponding blade is altered.

Claim 18 (withdrawn): The rotor blade assembly of claim 17 further comprising:

- a plurality of bladelets positioned near the outer periphery of the rotor head;
- the bladelets having a retracted position wherein substantially all portions of the bladelets are within the outer periphery of the rotor head; and
- a bladelett control mechanism for imparting force to the bladelets, wherein the imparted force moves a portion of one or more bladelets beyond the periphery of the rotor head, whereby passing air impacts the moved one or more bladelets exerting a pressure which causes rotational movement of the rotor blade assembly.

Claim 19 (withdrawn): The rotor blade assembly of claim 17 wherein the operating wheel includes a plurality of lobes, one or more of said lobes adapted to affixing a blade spar thereto.

PATENT
Docket Number 58060-010200

Claim 20 (withdrawn): The rotor blade assembly of claim 17 further comprising:

the operating wheel having upper and lower plates;
each blade spar positioned between the upper and lower plates; and
each blade spar attached to both the upper plate and the lower plate.

Claim 21 (withdrawn): The rotor blade assembly of claim 18 wherein the bladelett control mechanism further comprises:

an actuator; and
an actuator cable attached to the actuator and one or more bladeletts, wherein energizing the actuator pulls the actuator cable whereby the actuator cable transmits force to the one or more bladeletts.

Claim 22 (withdrawn): The rotor blade assembly of claim 17 further comprising:

a blade spar on each blade;
each blade spar connected to the operating wheel;
a spar guide having an opening, said blade spar passing through the opening in a sliding fit;
said pitch controller having an opening, said blade spar passing through the opening in a sliding fit;
the pitch controller opening having an internal shape substantially matching the external shape of the blade spar; and
a pitch control rod interacting between the pitch controller and the swash plate;
whereby the pitch controller controls the pitch of each blade spar.

Claim 23 (withdrawn): The rotor blade assembly of claim 22 wherein the internal shape of the pitch controller opening is polygonal.

PATENT
Docket Number 58060-010200

Claim 24 (withdrawn): The rotor blade assembly of claim 22 wherein the internal shape of the pitch controller opening is splined.

Claim 25 (withdrawn): The rotor blade assembly of claim 22 wherein the internal shape of the pitch controller includes curved surfaces.

Claim 26 (withdrawn): A rotor blade assembly for providing vertical lift to an aircraft comprising:

a rotor head;

one or more blades attached to the rotor head;

a piston chamber at the proximal end of said one or more blades, nearest to the center of the rotor head;

a spar guide on each blade;

a piston on each spar guide cooperating with the piston chamber, whereby fluid is forced into one side of the piston chamber driving the associated blade hydraulically in one direction, and whereby fluid is forced into the other side of the piston chamber driving the associated blade in the other direction;

at least one pitch controller attached to at least one blade;

each pitch controller connected to a swash plate; and

the swash plate moving at least one pitch controller whereby the pitch of its corresponding blade is altered.

Claim 27 (withdrawn): A rotor blade assembly for providing vertical lift to an aircraft comprising:

a rotor head;

one or more blades attached to the rotor head;

PATENT
Docket Number 58060-010200

means for altering the distance of the distal end of at least one of the blades relative to the center of the rotor head;

a spar guide on each blade;

at least one pitch controller attached to at least one blade;

said pitch controller connected to a swash plate; and

the swash plate moving at least one pitch controller whereby the pitch of its corresponding blade is altered.

Claim 28 (withdrawn): A rotor blade assembly for providing vertical lift to an aircraft comprising:

a rotor head;

one or more blades attached to the rotor head;

means for altering the distance of the distal end of at least one of the blades relative to the center of the rotor head;

a spar guide on each blade; and

at least one pitch controller attached to at least one blade, whereby the pitch of the corresponding blade is altered.

Claim 29 (withdrawn): The rotor blade assembly of claim 28 wherein the means for altering the distance is a screw drive.

Claim 30 (withdrawn): The rotor blade assembly of claim 28 wherein the means for altering is an electric actuator.

Claim 31 (withdrawn): The rotor blade assembly of claim 28 wherein the means for altering is a magnetic actuator.

Claim 32 (withdrawn): A rotor blade assembly for providing vertical lift to an aircraft comprising:

PATENT
Docket Number 58060-010200

a rotor head;

one or more blades attached to the rotor head;

a cable attached at the proximal end of said one or more blades, nearest to the center of the rotor head;

a spar guide on each blade;

a cable retractor to shorten or lengthen the cable to alter the distance from the distal end of the blade relative to the center of the rotor head;

at least one pitch controller attached to at least one blade;

each pitch controller connected to a swash plate; and

the swash plate moving at least one pitch controller whereby the pitch of its corresponding blade is altered.

Claim 33 (withdrawn): The rotor blade assembly of claim 32 wherein the cable retractor is a reel.

Claim 34 (new): A rotor blade assembly for providing vertical lift to an aircraft comprising:

a rotor head;

a plurality of cam surfaces;

a plurality of blades, each blade attached to a cam surface, wherein movement of at least one of the plurality of cam surfaces causes the radial distance between the distal tip of the attached blade and the center of the rotor head to alter.

at least one pitch controller attached to at least one blade;

each pitch controller connected to a swash plate; and

PATENT
Docket Number 58060-010200

the swash plate moving at least one pitch controller whereby the pitch of its corresponding blade is altered; whereby movement of a cam surface causes the radial distance between the distal tip of the attached blade and the center of the rotor head to alter.

a plurality of bladelets positioned near the outer periphery of the rotor head;

the bladelets having a retracted position wherein substantially all portions of the bladelets are within the outer periphery of the rotor head; and

a bladelett control mechanism for imparting force to the bladelets, wherein the imparted force moves a portion of one or more bladelets beyond the periphery of the rotor head, whereby passing air impacts the moved one or more bladelets exerting a pressure which causes rotational movement of the rotor blade assembly.

Claim 35 (new): The rotor blade assembly of claim 34 wherein the bladelett control mechanism further comprises:

an actuator, and

an actuator cable attached to the actuator and one or more bladelets, wherein energizing the actuator pulls the actuator cable whereby the actuator cable transmits force to the one or more bladelets.

Claim 36 (new): The rotor blade assembly of claim 34 further comprising:

an operating cam rotatably mounted relative to the rotor head, wherein the plurality of cam surfaces are located on the operating cam.

Claim 37 (new): The rotor blade assembly of claim 34 further comprising:

the operating cam having upper and lower plates;

cam surfaces on the upper plate substantially matching cam surfaces on the lower plate;

each blade spar positioned between the upper and lower plates; and

PATENT
Docket Number 58060-010200

each blade spar attached to a cam surface on the upper plate and the substantially matching cam surface on the lower plate.

Claim 38 (new): The rotor blade assembly of claim 34,

wherein each blade comprises a blade spar, wherein the blade spar is attached to a cam surface.

Claim 39 (new): The rotor blade assembly of claim 34,

wherein each blade comprises a root and a tip, and wherein each root is attached to a cam surface.

Claim 40 (new): The rotor blade assembly of claim 34 further comprising:

a blade spar on each blade;

each blade spar connected to one cam surface;

a spar guide having an opening, said blade spar passing through the opening in a sliding fit;

said pitch controller having an opening, said blade spar passing through the opening in a sliding fit;

the pitch controller opening having an internal shape substantially matching the external shape of the blade spar; and

a pitch control rod interacting between the pitch controller and the swash plate;

whereby the pitch controller controls the pitch of each blade spar.

Claim 41 (new): The rotor blade assembly of claim 40 wherein the internal shape of the pitch controller opening is polygonal.

Claim 42 (new): The rotor blade assembly of claim 40 wherein the internal shape of the pitch controller opening is splined.

PATENT
Docket Number 58060-010200

Claim 43 (new): The rotor blade assembly of claim 40 wherein the internal shape of the pitch controller includes curved surfaces.

Claim 44 (new): The rotor blade assembly of claim 40 further comprising a swiveling connector connecting the spar guide to the rotor head, wherein the spar guide may swivel relative to the rotor head.

Claim 45 (new): A rotor blade assembly for providing vertical lift to an aircraft comprising:

a rotor head;

a plurality of cam surfaces;

a plurality of blades, each blade attached to a cam surface, wherein movement of at least one of the plurality of cam surfaces causes the radial distance between the distal tip of the attached blade and the center of the rotor head to alter.

at least one pitch controller attached to at least one blade;

each pitch controller connected to a swash plate; and

the swash plate moving at least one pitch controller whereby the pitch of its corresponding blade is altered; whereby movement of a cam surface causes the radial distance between the distal tip of the attached blade and the center of the rotor head to alter.

a blade spar on each blade;

each blade spar connected to one cam surface;

a spar guide having an opening, said blade spar passing through the opening in a sliding fit;

said pitch controller having an opening, said blade spar passing through the opening in a sliding fit;

the pitch controller opening having an internal shape substantially matching the external shape of the blade spar; and

PATENT
Docket Number 58060-010200

a pitch control rod interacting between the pitch controller and the swash plate;
whereby the pitch controller controls the pitch of each blade spar.

Claim 46 (new): The rotor blade assembly of claim 45 wherein the internal shape of the pitch controller opening is polygonal.

Claim 47 (new): The rotor blade assembly of claim 45 wherein the internal shape of the pitch controller opening is splined.

Claim 48 (new): The rotor blade assembly of claim 45 wherein the internal shape of the pitch controller includes curved surfaces.

Claim 49 (new): The rotor blade assembly of claim 45 further comprising a swiveling connector connecting the spar guide to the rotor head, wherein the spar guide may swivel relative to the rotor head.